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     (FILE 'HOME' ENTERED AT 17:10:24 ON 11 MAY 2007)

     FILE 'HCAPLUS' ENTERED AT 17:10:40 ON 11 MAY 2007
L1             1 SEA ABB=ON  PLU=ON  US2004214088/PN

     FILE 'REGISTRY' ENTERED AT 17:13:19 ON 11 MAY 2007
L2            43 SEA ABB=ON  PLU=ON  (105-58-8/BI OR 107-31-3/BI OR

     FILE 'HCAPLUS' ENTERED AT 17:30:06 ON 11 MAY 2007
L3                QUE ABB=ON  PLU=ON  PORO? OR MICROPORO?
L4                QUE ABB=ON  PLU=ON  PERMEA? OR PERFORAT? OR SIEVE? OR
                  PERVIOUS?
L5                QUE ABB=ON  PLU=ON  POLYM? OR COPOLYM? OR RESIN? OR
                  HOMOPOLYM?
L6            35290 SEA ABB=ON  PLU=ON  (L3 OR L4)(3A)L5
L7                QUE ABB=ON  PLU=ON  FILM? OR THINFILM? OR LAYER? OR
                  OVERLAY?
L8             5311 SEA ABB=ON  PLU=ON  L6(3A)L7
L9                QUE ABB=ON  PLU=ON  ?MICROSCAL? OR ?MICROSIZ? OR
                  ?MICROMATERIAL? OR ?MICROCHEM? OR ?MICRO(A)(SCAL? OR
                  CHEM? OR SIZ? OR MATERIAL?)
L10              21 SEA ABB=ON  PLU=ON  L8 AND L9
L11               QUE ABB=ON  PLU=ON  POLYETHYLENE# OR PE OR POLYPROPYLENE#
                   OR PP OR POLYIMIDE# OR PI OR POLYSULFONE# OR POLYSULPHON
                  E# OR PSU
L12               QUE ABB=ON  PLU=ON  POLYURETHANE# OR PUR OR POLYVINYLCHLO
                  RIDE# OR POLY(W)VINYLCHLORIDE# OR PVC OR CELLULOSE# OR
                  NYLON# OR POLYACRYLONITRILE# OR PAN
L13               QUE ABB=ON  PLU=ON  POLYVINYLIDENE(2A)FLUORIDE# OR
                  POLY(W)VINYLIDENE(W)FLUORIDE# OR PVDF OR POLYTETRAFLUOROE
                  THYLENE# OR PTFE
L14               QUE ABB=ON  PLU=ON  FIRST? OR 1ST OR 1(W)ST OR PRIMARY?
L15               QUE ABB=ON  PLU=ON  SECOND? OR 2ND OR 2(W)ND
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L16             QUE ABB=ON  PLU=ON  ELECTROLY?
L17             QUE ABB=ON  PLU=ON  BATTERY
L18       20748 SEA ABB=ON  PLU=ON  (L11 OR L12 OR L13)(L)L16
L19           2 SEA ABB=ON  PLU=ON  L10 AND L16
L20           1 SEA ABB=ON  PLU=ON  L19 AND (L11 OR L12 OR L13)
L21         229 SEA ABB=ON  PLU=ON  L8 AND L18
L22          33 SEA ABB=ON  PLU=ON  L21 AND L14
L23          18 SEA ABB=ON  PLU=ON  L22 AND L15
L24           2 SEA ABB=ON  PLU=ON  L19 OR L20
L25          17 SEA ABB=ON  PLU=ON  L23 NOT L24
L26          15 SEA ABB=ON  PLU=ON  L22 NOT (L24 OR L25)
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=> d l24 ibib abs hitstr hitind 1-2

L24 ANSWER 1 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:905471 HCAPLUS Full-text
DOCUMENT NUMBER: 141:382157
TITLE: Method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery
INVENTOR(S): Lee, Young Gi; Kim, Kwang Man; Ryu, Kwang Sun; Chang, Soon Ho
PATENT ASSIGNEE(S): S. Korea
SOURCE: U.S. Pat. Appl. Publ., 10 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004214088	A1	20041028	US 2003-748363	20031229
KR 2004092188	A	20041103	KR 2003-26419	20030425
JP 2004327422	A	20041118	JP 2003-431458	20031225
CN 1610169	A	20050427	CN 2003-10125472	20031231
PRIORITY APPLN. INFO.:			KR 2003-26419 A	20030425

AB A composite polymer **electrolyte** for a lithium secondary battery and a method of manufacturing the same are provided. The composite polymer **electrolyte** includes a composite film structure which includes a first **porous polymer film** with good mech. properties and a second **porous polymer film** with **submicro-scale** morphol. of more compact porous structure than the first porous polymer structure, coated on a surface of the first **porous polymer film**, and an **electrolyte** solution impregnated into the composite film structure. The different morphologies of the composite film structure enable to an increase in mech. properties and ionic conductivity Furthermore, the charge/discharge cycle performance and stability of a lithium metal polymer secondary battery are enhanced.

IC ICM H01M010-40
INCL 429309000; 429316000; 429317000; 429314000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer **electrolyte** different morphol lithium secondary battery
IT Secondary batteries
(lithium; method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery)
IT Battery **electrolytes**
Composites
Polymer morphology
(method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery)
IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamide fibers, uses
Polyimides, uses
Polyoxyalkylenes, uses
Polysulfones, uses
Polyurethanes, uses
Zeolites (synthetic), uses
RL: DEV (Device component use); USES (Uses)
(method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery)
IT 96-47-9, 2-Methyltetrahydrofuran 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 109-94-4, Ethyl formate 109-99-9, Thf, uses 110-71-4 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 7791-03-9, Lithium perchlorate 9002-84-0, **Ptfe** 9002-86-2, Polyvinyl chloride 9002-88-4, **Polyethylene** 9003-07-0, **Polypropylene** 9003-20-7, Polyvinyl acetate 9003-21-8, Polymethyl acrylate 9003-32-1, Polyethyl acrylate 9003-42-3, Polyethyl methacrylate 9003-49-0, Polybutylacrylate 9003-63-8, Polybutylmethacrylate 9004-34-6, **Cellulose**, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12003-67-7, Aluminum lithium oxide allio2 13463-67-7, Titania, uses 14283-07-9, Lithium tetrafluoroborate 14807-96-6, Talc, uses 21324-40-3, Lithium hexafluorophosphate 24937-79-9, **Pvdf** 25014-41-9, **Polyacrylonitrile** 25322-68-3, Peo 25322-69-4, **Polypropylene** oxide 28960-88-5, Trifluoroethylene-vinylidene fluoride copolymer 33454-82-9, Lithium triflate 90076-65-6
RL: DEV (Device component use); USES (Uses)
(method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery)
IT 67-64-1, Acetone, uses 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, n-Methylpyrrolidone, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method of fabrication of composite polymer **electrolyte** of different morphologies for lithium secondary battery)

L24 ANSWER 2 OF 2 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1978:580757 HCAPLUS Full-text
DOCUMENT NUMBER: 89:180757
TITLE: Localization of micropores in polymer films
AUTHOR(S): Geymayer, W. F.; Grasenick, F.

CORPORATE SOURCE: Zent. Elektronenmikrosk. Graz, Graz, Austria
SOURCE: Electron Microsc., Pap. Int. Congr., 9th (1978), Volume 1, 490-1. Editor(s): Sturgess, J. M. Microsc. Soc. Canada: Toronto, Ont.
CODEN: 39ERA7
DOCUMENT TYPE: Conference
LANGUAGE: English

AB The pore channels in a swollen polymer matrix are marked and stabilized for electron microscopic examination by filling the active pore-volume with insol. metal salts or dense metallic ppts. AgCl was precipitated in the micropores of an osmotic membrane by placing a NaCl solution on 1 side and AgNO3 on the other and repeatedly changing the direction of flow. Polymer films coated on metal substrates are investigated by inserting the substrate as a cathode in a suitable **electrolyte** and filling the reactive pore-volume by **electrolytic** separation After filling the pore channels, the metal deposition widens in a mushroom shape, clearly marking the pore entry.

CC 36-6 (Plastics Manufacture and Processing)

IT **Polymers**, preparation
RL: PREP (Preparation)
(**microporous films**, method of marking pores for, for electron microscopy)

IT Pore
(**micro-**, **size** and location of, in polymer films, method for marking of)

=> d l25 ibib abs hitstr hitind 1-17

L25 ANSWER 1 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2006:1073250 HCAPLUS Full-text
DOCUMENT NUMBER: 145:422611
TITLE: Composite proton exchange membrane for gas permeation-resistant fuel cell, and its manufacture
INVENTOR(S): Mu, Shichun; Chen, Lei; Pan, Mu; Yuan, Runzhang
PATENT ASSIGNEE(S): Wuhan University of Technology, Peop. Rep. China
SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 13pp.
CODEN: CNXXEV
DOCUMENT TYPE: Patent
LANGUAGE: Chinese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 1707837	A	20051214	CN 2005-10018751	200505 20

PRIORITY APPLN. INFO.: CN 2005-10018751 200505 20

AB The title membrane is a 3-**layered porous polymer** reinforced composite exchange membrane having two **1st** water-retainable porous polymer reinforced composite exchange membranes as outer layers obtained by compositing inorg. nanoparticles and a **1st** solid polymer **electrolyte** , and a **2nd** porous polymer reinforced composite exchange membrane as an intermediate layer possessing humidifying and gas resistant functions and obtained by compositing Pt nanoparticles and a **2nd**

solid polymer **electrolyte**. The title membrane is manufactured by (1) immersing a porous polymer membrane in ethanol for cleaning and pre-swelling; (2) drying the membrane; (3) preparing **1st** solns. of **1st** inorg. nanoparticles (SiO2, TiO2, ZrO2, or Zr(HPO4)) and **1st** solid polymer **electrolytes**; (4) immersing the polymer membrane in the solution of the inorg. nanoparticles and the solid polymer **electrolyte** for 5-20 min; (5) taking the membrane out of the solution; (6) drying the membrane on a heating; (7) roll pressing the membrane; (8) repeating steps (4)-(7) several times to obtain the **1st** membrane with required thickness; (9) dispersing Pt nanoparticles in a **2nd** solution of **2nd** inorg. nanoparticles and a **2nd** solid polyelectrolyte; (10) immersing the ethanol treated polymer membrane in the **2nd** solution for 5-20 min; (11) repeating steps (4)-(7) several times to obtain the **2nd** membrane; (12) sandwiching the **2nd** membrane between two **1st** membranes, then sandwiching between two **PTFE** thin films; (13) and hot pressing at 120-135° under 0.5-4 MPa for 1-5 min, and stripping the **PTFE** thin films.

IC ICM H01M008-02
ICS H01M008-10; H01M002-14; C08J005-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

L25 ANSWER 2 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2005:983911 HCAPLUS Full-text
DOCUMENT NUMBER: 143:289420
TITLE: **Secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte
INVENTOR(S): Kwak, Seung-Yeop; Jeon, Jae-Deok
PATENT ASSIGNEE(S): Seoul National University Industry Foundation, S. Korea
SOURCE: PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005081646	A2	20050909	WO 2005-KR525	200502 26
WO 2005081646	A3	20060202		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
KR 2005087263	A	20050831	KR 2004-12983	200402 26

PRIORITY APPLN. INFO.: KR 2004-12983 A 200402 26

AB Provided are a solvent-free polymer **electrolyte** and a **secondary** battery employing the same. The solvent-free **polymer electrolyte** includes: a **porous film** including a **first** polymer and a **second** oligomer, the **first** polymer being at least one selected from the group consisting of **poly(vinylidene fluoride**-co-hexafluoropropylene) copolymers, polyvinylidenefluorides, polymethylmethacrylates, **polyacrylonitriles**, polyethyleneoxides, and **celluloses** having a polyether chain and the **second** oligomer being at least one selected from the group consisting of poly(ethylene oxide-co-ethylene carbonate) copolymers with at least one terminal groups substituted by a halogen atom and polyethyleneglycols with at least one terminal groups substituted by a halogen atom; and an **electrolyte** present in the pores of the porous film and including the **second** oligomer and a lithium salt. Since the solvent-free polymer **electrolyte** contains no liquid organic **electrolyte**, it is not accompanied by problems caused by leakage or evaporation of an organic solvent, unlike a gel-type polymer **electrolyte**. Furthermore, the solvent-free polymer **electrolyte** has enhanced ionic conductivity as compared to a conventional solvent-free polymer **electrolyte**.

IC ICM H01M

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(halogenated; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT Fillers
(inorg.; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT Battery anodes
Battery electrolytes
Polymer electrolytes
Secondary batteries
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT Carbonaceous materials (technological products)
Fluoropolymers, uses
Oligomers
RL: DEV (Device component use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 7439-93-2D, Lithium, intercalation compound 7791-03-9, Lithium perchlorate 9004-34-6, **Cellulose**, uses 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 12017-96-8, Chromium lithium oxide (CrLiO2) 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-79-7, Lithium manganese oxide limno2 12190-79-3, Cobalt lithium oxide (CoLiO2) 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, **Pvdf** 25014-41-9, **Polyacrylonitrile** 25322-68-3, Peo 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 90076-65-6 106818-19-3D, Ethylene carbonate-ethylene oxide copolymer, halogenated 131651-65-5 132843-44-8
RL: DEV (Device component use); USES (Uses)
(**secondary** battery using **porous film** type solvent-free polymer **electrolyte** filled with

oligomer/prepolymer **electrolyte**)

IT 25608-11-1DP, chloride terminated
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 1344-28-1, Alumina, uses 7631-86-9, Silica, uses 13463-67-7, Titania, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

IT 37220-89-6, Lithium aluminate
RL: MOA (Modifier or additive use); USES (Uses)
(γ-; **secondary** battery using porous film type solvent-free polymer electrolyte filled with oligomer/prepolymer electrolyte)

L25 ANSWER 3 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:982634 HCAPLUS Full-text
DOCUMENT NUMBER: 143:249370
TITLE: Manufacture of porous films with improved porosity and air permeability
INVENTOR(S): Emori, Hideyuki; Aburaya, Aki
PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005239773	A	20050908	JP 2004-48177	200402 24
PRIORITY APPLN. INFO.:			JP 2004-48177	200402 24

AB The films, useful for nonaq. **electrolyte** battery separators, are manufactured by kneading polymer compns. containing polyolefins and plasticizers, cooling the kneaded products, stretching the resulting sheets in ≥1 direction, eluting the plasticizers from the stretched products into **first** solvents, treatment of the stretched films with ultrasonic wave in nonpenetrable **second** solvents, and drying the stretched products. Thus, a composition containing **polyethylene**, Norsorex (norbornene rubber), TPE 821 (thermoplastic elastomer), and paraffin oil was kneaded, cooled, hot-pressed, biaxially stretched, treated with decane for elution of the paraffin oil, treated with ultrasonic wave in water, dried, and heat-treated for crosslinking to give a porous film with porosity 35%, air permeability (JIS P 8117) 380 s/100 cm3, and piercing strength 3.0 N.

IC ICM C08J009-26
ICS H01M002-16; C08L023-00

CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

IT Drying
Plastic films
Plasticizers
Secondary battery separators

(manufacture of porous films with improved porosity and air permeability)

IT **Polymer** blends
RL: TEM (Technical or engineered material use); USES (Uses)
(manufacture of **porous films** with improved porosity and air permeability)

L25 ANSWER 4 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:611324 HCAPLUS Full-text
DOCUMENT NUMBER: 143:100453
TITLE: Separators for electronic devices
INVENTOR(S): Sugiyama, Masahide; Totsuka, Hiroki; Takahata, Masanori
PATENT ASSIGNEE(S): Tomoegawa Paper Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 13 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2005190736	A	20050714	JP 2003-428047	200312 24
PRIORITY APPLN. INFO.:			JP 2003-428047	200312 24

AB The separator comprises a **porous** elec. insulating **polymer film** containing polymers with **polyethylene** oxide structures and/or polymers with **polypropylene** oxide structures. Preferably, the separators contain Li salts. Such separators for **secondary** batteries, including (1) vinylidene fluoride homopolymer, (2) copolymer of vinylidene fluoride with tetrafluoroethylene, hexafluoropropylene, ethylene, propylene, and/or ethylene trifluoride, or (3) mixts. of (1) and (2) are also claimed. The electronic devices may especially be Li ion **secondary** batteries, polymer lithium batteries, aluminum **electrolytic** capacitors, or elec. double layer capacitors. The separators show low charging characteristics and excellent runnability and are suitable for mass production

IC ICM H01M002-16
ICS H01G009-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 47, 76

ST separator porous elec insulator film; lithium salt PEO porous film separator; elec double layer capacitor **polypropylene** oxide separator; **polyethylene** oxide porous film separator **electrolytic** capacitor; **polyvinylidene fluoride** polymer battery separator; **porous** elec insulating **polymer film** separator

IT **Primary** battery separators
Secondary battery separators
(porous dielec. film separators containing polyethylene oxide and/or polypropylene oxide for batteries and capacitors)

IT **Electrolytic** capacitors
(separators for; porous dielec. film separators containing **polyethylene** oxide and/or **polypropylene** oxide for batteries and capacitors)

IT **Polymer electrolytes**

(separators; **porous** dielec. **film** separators containing **polyethylene** oxide and/or **polypropylene** oxide for batteries and capacitors)

IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 9011-14-7, Poly(methyl methacrylate) 24937-79-9, Vinylidene fluoride **homopolymer** 25014-41-9, Polyacrylonitrile
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**porous** separator **film**; **porous** dielec. **film** separators containing polyethylene oxide and/or polypropylene oxide for batteries and capacitors)

L25 ANSWER 5 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2005:239069 HCAPLUS Full-text
DOCUMENT NUMBER: 142:298942
TITLE: Method for continuous production of functional **film** having **porous** **resin** sheet containing functional polymer
INVENTOR(S): Hiraoka, Hideki; Kubota, Kouzou; Yamaguchi, Takeo; Ooya, Nobuo; Harada, Hiroshi
PATENT ASSIGNEE(S): Toagosei Co., Ltd., Japan
SOURCE: PCT Int. Appl., 32 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2005023921	A1	20050317	WO 2004-JP6389	200405 12
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2005076012	A	20050324	JP 2003-311841	200309 03
CA 2537795	A1	20050317	CA 2004-2537795	200405 12

PRIORITY APPLN. INFO.:	JP 2003-311841	A	200309 03
	WO 2004-JP6389	W	200405 12

AB A method comprises (i) a step wherein a porous resin sheet (a porous **polyethylene** sheet or the like) is continuously conveyed and impregnated with a polymer precursor having a functional group (2-acrylamide-2-methylpropanesulfonic acid or the like), to attach the polymer precursor to the porous resin sheet, (ii) a polymerization step wherein a **first** and a **second** resin films (both are a polyester film or the like) are continuously supplied to both the surfaces of the porous sheet having been impregnated with the above polymer precursor and containing the polymer precursor attached thereto, in such a manner that the resin films are contacted with the surfaces and the porous sheet is sandwiched between the two resin films, and then the polymer precursor is polymerized (by the irradiation with an active energy ray, and the like), (iii) a film releasing step, (iv) and a polymer removing step. Thus, a **polyethylene** porous film was continuously impregnated with a solution comprising 2-acrylamido-2-methylpropanesulfonic acid 90, N,N'-methylenebisacrylamide 10, Darocure 1173 2, a surfactant 2, and water 100 parts, each **polyethylene** terephthalate film with oxygen permeability 385 mL/m2·24 h·MPa was placed on both side of the precursor-attached porous film, irradiated with a mercury lamp, removed two **polyethylene** terephthalate films to give an **electrolyte** membrane with semitransparency, good appearance, proton conductivity 53 S/cm2, and methanol permeation flux 0.72 kg/m2·hour.

IC ICM C08J009-40

CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

ST continuous prodn functional **film porous** **resin** sheet; porous film contg acrylamidomethylpropanesulfonic acid methylenebisacrylamide copolymer electrolyte membrane

IT Porous materials
(films; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT Polymer electrolytes
(method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT Polyimides, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, laminate with porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT Polyethers, uses
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyimide-, laminate with porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT Polyolefins
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(porous substrates; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT Films
(porous; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT 69824-22-2P, 2-Acrylamido-2-methylpropanesulfonic acid-N,N'-methylenebisacrylamide copolymer

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(functional polymer; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT 26298-81-7P 26615-45-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(laminate with porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

IT 9002-88-4, Polyethylene 603951-77-5, U-Pore UP 3025
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(porous substrate; method for continuous production of functional **films** having **porous resin** sheet containing functional polymers)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 6 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:894110 HCAPLUS Full-text
DOCUMENT NUMBER: 142:97389
TITLE: Preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method for the battery using the polymer electrolyte product
INVENTOR(S): Do, Chil Hun; Jin, Bong Su; Jin, Chang Su; Mun, Seong In; Yoon, Mun Su
PATENT ASSIGNEE(S): Korea Electro Technology Research Institute, S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2001090406	A	20011018	KR 2000-15364	200003 25
PRIORITY APPLN. INFO.:			KR 2000-15364	200003 25

AB A method for preparing the polymer electrolyte product for a lithium polymer **secondary** polymer and a method for preparing the lithium polymer **secondary** polymer using the polymer electrolyte product are provided, to prevent the leakage of liquid electrolyte. The preparation method of a polymer electrolyte product comprises the steps of: dissolving poly(vinyl chloride) as a matrix polymer into a **first** solvent, adding a plasticizer with high b.p., adding silica whose surface is coated with an organic material, and mixing them; coating the mixture onto a substrate uniformly and drying it to make a polymer electrolyte film that the **first** solvent is removed; dipping the polymer electrolyte film into a **second** solvent that the plasticizer with high b.p. is dissolved and the matrix polymer is

not dissolved, to remove only the plasticizer, and thereby making a polymer film with many micropores; and dipping the polymer film into a liquid electrolyte containing lithium salts for allowing the liquid electrolyte to soak into the micropores, and thereby obtaining the polymer electrolyte product. Preferably the number mean mol. weight of poly(vinyl chloride) is 10,000-200,000; the particle size of silica is less than 1 μm; the organic material is silane; the **first** solvent is tetrahydrofuran; the plasticizer is di-Bu phthalate or dioctyl phthalate; and the **second** solvent is methanol or Et ether.

IC ICM H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **secondary** lithium battery polymer **electrolyte**
silica **PVC** porous composite
IT Membranes, nonbiological
(composite; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT Porous materials
(films; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT **Secondary** batteries
(lithium; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT Dissolution
(of polymer and plasticizers; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT **Films**
(**porous**; preparation method of **polymer** electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT Plasticizers
Polymer electrolytes
(preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)
IT 7439-93-2D, Lithium, salts
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(composite with **PVC**/coated silica; preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of battery using polymer **electrolyte** product)
IT 9002-86-2
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(d.p. 162-3247; preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method for battery using polymer electrolyte product)
IT 17341-24-1D, **PVC** complexes, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of

battery using polymer **electrolyte** product)

IT 60-29-7, Diethyl ether, uses 67-56-1, Methanol, uses 109-99-9, Tetrahydrofuran, uses
RL: NUU (Other use, unclassified); USES (Uses)
(preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)

IT 84-74-2 117-81-7, Dioctyl phthalate
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); REM (Removal or disposal); PROC (Process)
(preparation method of polymer electrolyte product for lithium polymer **secondary** battery and preparation method of battery using polymer electrolyte product)

IT 7631-86-9, Silica, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(silane-coated, composite with **PVC**/Lithium salt complexes; preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of battery using polymer **electrolyte** product)

IT 7803-62-5, Silane, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(silica coated with, composite with **PVC**/lithium salt complexes; preparation method of polymer **electrolyte** product for lithium polymer **secondary** battery and preparation method of battery using polymer **electrolyte** product)

L25 ANSWER 7 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2004:889873 HCAPLUS Full-text
DOCUMENT NUMBER: 142:95120
TITLE: Polymeric electrolyte for electrochemical device using multilayered polymeric film as separator
INVENTOR(S): Ahn, Sun Ho; Hwang, Ji Yeong; Lee, Hyang Mok; Lee, Seung Jin
PATENT ASSIGNEE(S): LG Chem Investment Ltd., S. Korea
SOURCE: Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DOCUMENT TYPE: Patent
LANGUAGE: Korean
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
KR 2001055968	A	20010704	KR 1999-57312	19991213

PRIORITY APPLN. INFO.: KR 1999-57312 19991213

AB Provided is a multilayered polymeric film having electrochem. stability, adhesive property with an electrode, **electrolytic** solution impregnating and stabilizing property, which is produced without extracting or removing plasticizer. And, a method for preparing thereof and a polymeric **electrolyte** for an electrochem.

device using the multilayered polymeric film as a separator are also provided. The multilayered polymeric **film** comprises: (i) a **porous first polymer layer** ; and (ii) a gelled **second** polymer layer of **polyvinylidene fluoride**-chlorotrifluoroethylene copolymer. The method comprises the steps of: (i) dissolving **polyvinylidene fluoride**-chlorotrifluoroethylene copolymer in solvent selected from the group consisting of acetone, dimethylacetamide and N-methyl-2-pyrrolidone; and (ii) after coating or impregnating or simultaneously coating and impregnating one side or both sides of a **porous polymer film** with the solution of the step (i), drying it to form a gelled **second** polymer layer. The polymer **electrolyte** system for an electrochem. device comprises: (i) a multilayered **polymeric** separator comprising a **porous first polymeric layer** and a gelled **second** polymer layer of **polyvinylidene fluoride**-chlorotrifluoroethylene copolymer; and (ii) a liquid **electrolyte** comprising a salt and an organic solvent.

IC ICM B32B027-28
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 72, 76

L25 ANSWER 8 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:414438 HCAPLUS Full-text
DOCUMENT NUMBER: 138:404361
TITLE: **Secondary** nonaqueous electrolyte battery and its manufacture
INVENTOR(S): Segawa, Masazumi
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003157898	A	20030530	JP 2001-355042	200111 20
PRIORITY APPLN. INFO.:			JP 2001-355042	200111 20

AB The battery has an anode and/or a cathode containing a **1st** porous polymer electrolyte, and a **2nd porous polymer** electrolyte **layer** (a) between the 2 electrodes or (b) on both sides of a separator; and is obtained by adhering (a) the electrode-electrolyte or (b) the cathode-electrolyte, separator-electrolyte and anode-electrolyte with heat treatment; where the battery satisfies (T2-4)≤ T1≤ (T2+5) and T3≥ (T2+10), [T1 = heat treatment temperature; T2 = initial m.p. of the polymer electrolyte layer observed by DSC; and T3 = reaction peak temperature].

IC ICM H01M010-40
ICS H01M004-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST porous polymer electrolyte **secondary** battery manuf; heat treatment DSC specification
IT **Secondary** batteries
(lithium; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)
IT Battery electrolytes
(manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)
IT Fluoropolymers, uses

RL: DEV (Device component use); USES (Uses)
(manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(anode collector; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(anode; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(cathode collector; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 143623-51-2, Cobalt lithium nickel oxide (Co0.15LiNi0.85O2)
RL: DEV (Device component use); USES (Uses)
(cathode; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate
RL: DEV (Device component use); USES (Uses)
(electrolyte solution; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(electrolyte; manufacture of electrodes containing porous polymer electrolytes for **secondary** lithium batteries)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer
24937-79-9, **PVDF**
RL: DEV (Device component use); USES (Uses)
(manufacture of electrodes containing porous polymer **electrolytes** for **secondary** lithium batteries)

L25 ANSWER 9 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:71260 HCAPLUS Full-text
DOCUMENT NUMBER: 138:138410
TITLE: Porous polyolefinic films containing particles and production method thereof
INVENTOR(S): Kishii, Yutaka; Kii, Keisuke; Uetani, Yoshihiro; Fujita, Shigeru; Yamaguchi, Mutsuko
PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003026847	A	20030129	JP 2001-214619	200107 16
PRIORITY APPLN. INFO.:			JP 2001-214619	200107 16

AB Title films useful for separators for nonaq. **electrolyte** batteries comprise polyolefin resins with weight average mol. weight ≥ 5 + 105 and particles with

particle diameter 0.001 - 10 μm, and have surface pore size 0.01-1 μm, pore size of the surface fractured in the thickness direction 0.1 - 10 μm, and pore size ratio of surface/surface fractured in the thickness direction < 0.2. Thus, GUR 4012 (**polyethylene**) with m.p. 135° and weight average mol. weight 1 + 106 14, MG 35 (styrene-acrylate copolymer particle) with particle diameter 1 μm 8, and liquid paraffin 78 parts were kneaded at 160° and extruded at 160° to give a sheet-shaped article, which was preheated at 115°, a solvent was removed at 120°, stretched 2-folds in the width and longitudinal direction resp. to give a 14 μm-thick porous film with porosity 53%, ion flow velocity 0.38 mmol/min, **electrolyte** impregnation ratio 32%, polymeric **electrolyte** impregnation ratio 43%, surface pore size 0.05 μm, pore size of the surface fractured in the thickness direction 4.42 μm, and pore size ratio of surface/surface fractured in the thickness direction 0.01, which was used as separator for a nonelectrolyte cell showing discharge capacity 1.42 mAh.

IC ICM C08J009-26
ICS C08J009-28; C08K003-00; C08L023-06; C08L101-00; H01M002-16; H01M010-40

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76

ST porous polyolefin film contg particle prepn; polyethylene styrene acrylate **copolymer resin** particle **porous film** prepn

IT **Primary** batteries
Secondary batteries
(nonaq. electrolyte; preparation of porous polyolefinic films containing particles useful for battery separators)

IT **Primary** battery separators
Secondary battery separators
(nonaq.; preparation of porous polyolefinic films containing particles useful for battery separators)

IT **Polymer** electrolytes
(preparation of **porous** polyolefinic **films** containing particles useful for battery separators containing)

IT 79-10-7D, Acrylic acid, ester, polymers with styrene 100-42-5D, Styrene, polymers with acrylates
RL: MOA (Modifier or additive use); USES (Uses)
(**resin** particle; preparation of **porous** polyolefinic **films** containing particles useful for battery separators)

L25 ANSWER 10 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:812223 HCAPLUS Full-text
DOCUMENT NUMBER: 137:339975
TITLE: Nonaqueous electrolyte **secondary** battery having **porous polymer layer** on depolarization **layer** and manufacture thereof
INVENTOR(S): Tagawa, Masahiro; Kitano, Shinya; Hasumi, Takeshi
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 2002313429	A	20021025	JP 2001-120516	200104 19

PRIORITY APPLN. INFO.: JP 2001-120516 200104 19

AB The nonaq. electrolyte **secondary** battery has a depolarization layer on a pos. electrode and/or a neg. electrode which has a porous polymer on the surface and in the pores, wherein a weight of the porous polymer per unit volume on the surface is higher than that in the pores and a thickness of the porous polymer on the surface is set at 0.1-6 μm. The process comprises the steps of (1) applying an active agent on a metal foil current collector to form an electrode, (2) pressing the electrode, (3) impregnating the electrode with a polymer solution which has a viscosity ≥1,000 cps and contains a **1st** solvent, (4) extracting the **1st** solvent in the polymer on the electrode using a **2nd** solvent, and (5) drying the electrode.

IC ICM H01M010-40
ICS H01M004-02; H01M004-04; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **porous polymer** depolarization **layer**
nonaq electrolyte **secondary** battery

IT **Secondary** batteries
(**porous polymer** in depolarization
layer of nonaq. electrolyte **secondary** battery)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**porous polymer** in depolarization
layer of nonaq. electrolyte **secondary** battery)

IT 9011-14-7, PMMA 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 25014-41-9, **Polyacrylonitrile**
25322-68-3, PEO
RL: DEV (Device component use); EPR (Engineering process); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(**porous polymer** in depolarization
layer of nonaq. **electrolyte secondary** battery)

L25 ANSWER 11 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:672608 HCAPLUS Full-text
DOCUMENT NUMBER: 137:202356
TITLE: Ion-conducting adhesive **porous films, polymer** gel electrolytes from them, their manufacture, and applications
INVENTOR(S): Yamaguchi, Mutsuko; Uetani, Yoshihiro; Kii, Keisuke; Yamamura, Takashi; Nakamura, Seiji; Tabuchi, Masato
PATENT ASSIGNEE(S): Nitto Denko Corp., Japan; Daiso Co., Ltd.
SOURCE: Jpn. Kokai Tokkyo Koho, 20 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
JP 2002249742	A	20020906	JP 2001-358853		200111 26
JP 2007035646	A	20070208	JP 2006-237184		200609 01
PRIORITY APPLN. INFO.:			JP 2000-373466	A	200012 07
			JP 2001-358853	A3	200111 26

AB The films, showing 180° peeling strength ≥2 N/20 mm, comprise **porous** base **films** and **polymers** having poly(meth)acrylate, poly(ethylene oxide), poly(propylene oxide), poly(ethylene oxide/propylene oxide), polyphosphazene, poly(vinyl ether), or polysiloxane main chains and oligo(alkylene oxide) side chains. Polymer gel **electrolytes** manufactured using them are useful for batteries and capacitors. Thus, porous ultrahigh-mol.-weight **polyethylene** film was coated with a composition containing glycidyl methoxyethoxyethyl ether-allyl glycidyl ether-ethylene oxide (49:51:1) copolymer and Blemmer PDE 100, soaked in a solution containing LiClO4, and heated to give a gel showing conductivity 8.0 + 10-4 S/cm.

IC ICM C09J007-02
ICS C08J009-36; C09J009-02; C09J171-00; C09J183-12; C09J201-00; H01B001-06; H01B013-00; H01G009-02; H01G009-035; H01G009-038; H01M010-40; C08L101-00

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76

IT Porous materials
(**films**; ion-conducting adhesive **porous** **films** for **polymer** gel electrolytes)

IT Capacitors
Electrolytes
Primary batteries
Secondary batteries
(ion-conducting adhesive **porous** **films** for **polymer** gel electrolytes)

IT Polyethers, uses
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(oligo(alkylene oxide) side chain-containing; ion-conducting adhesive **porous** **films** for **polymer** gel electrolytes)

IT Polyoxyalkylenes, uses
Polyphosphazenes
Polysiloxanes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(oligo(alkylene oxide) side chain-containing; ion-conducting adhesive **porous** **films** for **polymer** gel electrolytes)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(porous base **film**; ion-conducting adhesive **porous** **films** for **polymer** gel electrolytes)

IT Films

(porous; ion-conducting adhesive **porous films** for **polymer** gel electrolytes)

IT 7791-03-9, Lithium perchlorate
RL: TEM (Technical or engineered material use); USES (Uses)
(electrolyte; ion-conducting adhesive **porous films** for **polymer** gel electrolytes)

IT 115383-11-4P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(ion-conducting adhesive **porous films** for **polymer** gel electrolytes)

IT 454171-46-1P
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(ion-conducting adhesive **porous films** for **polymer** gel electrolytes)

IT 9002-84-0, **PTFE**
RL: TEM (Technical or engineered material use); USES (Uses)
(porous base **film**; ion-conducting adhesive **porous films** for **polymer** gel **electrolytes**)

IT 9002-88-4, **Polyethylene**
RL: TEM (Technical or engineered material use); USES (Uses)
(ultrahigh-mol.-weight, porous base **film**; ion-conducting adhesive **porous films** for **polymer** gel **electrolytes**)

L25 ANSWER 12 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:499574 HCAPLUS Full-text
DOCUMENT NUMBER: 137:35458
TITLE: Crosslinked or modified **polymeric porous films** as separators for batteries with nonaqueous electrolytes
INVENTOR(S): Kenichiro, Kami; Hiroshi, Ueshima; Ryuichirou, Shinkai; Norikazu, Hosokawa; Manabu, Yamada; Hideo, Amaki; Tomoaki, Tamura
PATENT ASSIGNEE(S): Denso Corp., Japan
SOURCE: Fr. Demande, 75 pp.
CODEN: FRXXBL
DOCUMENT TYPE: Patent
LANGUAGE: French
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
FR 2814284	A1	20020322	FR 2001-12110	200109 19
JP 2002170541	A	20020614	JP 2001-145341	200105 15
PRIORITY APPLN. INFO.:			JP 2000-287145 A	200009 21
			JP 2001-145341 A	200105 15

JP 2000-141476 A
200005
15

AB Non-swelling polymeric separators for batteries with non-aqueous **electrolytes** are prepared by crosslinking or modifying a **porous polymer film** with compds. that formed the crosslinks or added chains by at least 2 carbon atoms away from the linking units between the monomers (e.g., the ester linkage of polyesters). The polymeric film can be selected from polybenzimidazoles, **polyimides**, polyether-**polyimides**, polyamide-**polyimides**, polyphenylene sulfides, polyphenylene oxides, polyether-**polysulfones**, **polysulfones**, polyether-polyketones, aramides, saturated polyesters, polyoxymethylenes, etc. Suitable crosslinking agents or modifiers include acrylates, vinyl compds., and functionalized (unsatd.) alkoxysilanes.

IC ICM H01M010-38

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Polysiloxanes, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(acrylic, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT Polyamide fibers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(aramid, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT Polyesters, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(aromatic, Vylon KS001, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT **Primary** battery separators
Secondary battery separators
(crosslinked or modified **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT Fluoropolymers, uses
Polyamides, uses
Polybenzimidazoles
Polyesters, uses
Polyimides, uses
Polyoxymethylenes, uses
Polyoxyphenylenes
Polysulfones, uses
Polythiophenylenes
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT Battery electrolytes
(nonaq.; crosslinked or modified **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT **Polyimides**, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or

reagent); USES (Uses)
(polyamide-; crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT **Polyimides**, uses
Polyketones
Polysulfones, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(polyether-, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT Polyamides, uses
Polyethers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(**polyimide**-, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT Polyethers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(polyketone-, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT Acrylic polymers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(polysiloxane-, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT Polyethers, uses
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(**polysulfone**-, crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT 2530-85-0, γ-(Methacryloxypropyl)trimethoxysilane
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(KBM503, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT 4369-14-6, 2-Propenoic acid, 3-(trimethoxysilyl)propyl ester
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(KBM5103, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT 1025-15-6, Triallyl isocyanurate
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(TAIC, crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

IT 9016-80-2, Poly(methylpentene) 9020-73-9, **Polyethylene** naphthalate 24937-79-9, **Poly(vinylidene fluoride)** 24968-11-4, **Polyethylene** naphthalate 24968-12-5, Polybutylene terephthalate 25038-59-9, **Polyethylene** terephthalate, uses 26062-94-2, Polybutylene

terephthalate 28779-82-0, Polybutylene naphthalate 51806-50-9, Polybutylene naphthalate
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(crosslinked or modified, battery separators; **polymeric porous films** as separators for batteries with nonaq. **electrolytes**)

IT 75-94-5, Vinyltrichlorosilane 78-08-0, Vinyltriethoxysilane 97-90-5, Ethylene glycol dimethacrylate 131-17-9, Diallyl phthalate 1067-53-4, Vinyltris(β-methoxyethoxy)silane 1321-74-0, Divinylbenzene, uses 1337-81-1, Vinylpyridine 2768-02-7, Vinyltrimethoxysilane 3030-60-2, Allyl isocyanurate 3290-92-4, Trimethylolpropane trimethacrylate 6294-79-7, Diallyl isocyanurate 21142-29-0, γ-(Methacryloxypropyl)triethoxysilane 25013-15-4, Vinyltoluene 65100-04-1, γ-(Methacryloxypropyl)methyldiethoxysilane
RL: DEV (Device component use); RCT (Reactant); RACT (Reactant or reagent); USES (Uses)
(crosslinking or modifying agent; **polymeric porous films** as separators for batteries with nonaq. electrolytes)

L25 ANSWER 13 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2002:143078 HCAPLUS Full-text
DOCUMENT NUMBER: 136:201311
TITLE: Multicomponent composite film and method for preparing the same
INVENTOR(S): Lee, Seung-Jin; Lee, Hyang-Mok; Ahn, Soon-Ho; Cho, Jin-Yeon; Yong, Hyun-Hang; Lee, Hyung-Keun; Lee, Sang-Young; Song, Heon-Sik; Park, Soon-Yong; Kyung, You-Jin; Ahn, Byeong-In
PATENT ASSIGNEE(S): LG Chemical Co., Ltd., S. Korea
SOURCE: PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2002015299	A1	20020221	WO 2001-KR1374	20010811
W: CN, JP, US RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
KR 2002071203	A	20020912	KR 2001-11191	20010305
EP 1310005	A1	20030514	EP 2001-958588	20010811
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
JP 2004506542	T	20040304	JP 2002-520328	20010811

JP 3885100	B2	20070221		
US 2002187401	A1	20021212	US 2002-110047	200204 05
JP 2006289985	A	20061026	JP 2006-135816	200605 15
PRIORITY APPLN. INFO.:			KR 2000-46735	A 200008 12
			KR 2001-11191	A 200103 05
			JP 2002-520328	A3 200108 11
			WO 2001-KR1374	W 200108 11

AB The present invention provides a multi-component composite film comprising (a) polymer support layer (e.g., **polypropylene**); and (b) **porous** gelable **polymer layer** (e.g., **polyvinylidene fluoride**) which is formed on one side or both sides of the support layer of (a), wherein the support film of (a) and the gelable polymer layer of (b) are unified without the interface, a method for preparing the same, and a polymer **electrolyte** system applied the same.

IC ICM H01M002-16

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52

IT Fuel cells
Polymer electrolytes
Primary batteries
Secondary batteries
Sensors
(multicomponent composite film and method for preparing the same)

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L25 ANSWER 14 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2000:420559 HCAPLUS Full-text
DOCUMENT NUMBER: 133:32683
TITLE: Fuel cell electrodes and their manufacture
INVENTOR(S): Hitomi, Shuji
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 3
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000173624	A	20000623	JP 1999-78885	199903

				24
DE 10004955	A1	20000817	DE 2000-10004955	200002 04
US 7147957	B1	20061212	US 2000-497515	200002 04
PRIORITY APPLN. INFO.:			JP 1998-296157	A 199810 03
			JP 1999-29045	A 199902 05
			JP 1999-78885	A 199903 24
			JP 1999-78889	A 199903 24

AB The electrodes have a catalyst **layer** containing a solid **polymer** electrolyte on a **porous** conductive substrate, where the substrate contains a porous resin. The electrodes are prepared by: impregnating a porous conductive material with a solution of a resin dissolved in a **1st** solvent, immersing the impregnated material in a **2nd** solvent miscible with the **1st** solvent but insol. for the **resin** to form a **porous resin**
layer on the material, and joining the material with an electrolyte containing catalyst layer.

IC ICM H01M004-86
ICS H01M004-88; H01M008-02; H01M008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Fuel cell electrodes
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous** **polymer** coated carbon substrates)

IT Fluoropolymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous** **polymer** coated carbon substrates)

IT 7440-06-4, Platinum, uses
RL: CAT (Catalyst use); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer electrolyte-catalyst **layer** on **porous** **polymer** coated carbon substrates)

IT 7440-44-0, Carbon, uses 24937-79-9, **Poly**(**vinylidene fluoride**)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(structure and manufacture of fuel cell electrodes containing polymer **electrolyte**-catalyst **layer** on **porous** **polymer** coated carbon substrates)

L25 ANSWER 15 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:210028 HCAPLUS Full-text
DOCUMENT NUMBER: 130:239972

TITLE: **Porous polymer film** as separator for nonaqueous-electrolyte battery
INVENTOR(S): Ishibashi, Mamoru
PATENT ASSIGNEE(S): Asahi Chemical Industry Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11086830	A	19990330	JP 1997-241098	19970905

PRIORITY APPLN. INFO.: JP 1997-241098 19970905

AB The title film comprises a polar polymer having continuous pores in the film and thickness direction, and the pores at either pair of the opposing end faces are closed. The film absorbs the electrolyte rapidly and has high leakage-preventing ability.

IC ICM H01M002-18
ICS H01M002-16; C08J009-28
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polar polymer separator nonaq **electrolyte** battery; porous battery separator rapid **electrolyte** impregnation; leakage prevention porous battery separator; acrylonitrile polymer battery separator; **polyvinylidene fluoride** polymer battery separator
IT Porous materials
(**films; porous** polar **polymer film** as separator for nonaq.-electrolyte battery for rapid electrolyte impregnation and leakage prevention)
IT **Primary** battery separators
Secondary battery separators
(**porous** polar **polymer film** as separator for nonaq.-electrolyte battery for rapid electrolyte impregnation and leakage prevention)
IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(**porous** polar **polymer film** as separator for nonaq.-electrolyte battery for rapid electrolyte impregnation and leakage prevention)
IT **Films**
(**porous; porous** polar **polymer film** as separator for nonaq.-electrolyte battery for rapid electrolyte impregnation and leakage prevention)
IT 9011-17-0, Kynar 2801 24937-79-9, KF 1000 25014-41-9, Acrylonitrile **homopolymer** 26658-88-8, Acrylonitrile-methyl acrylate-sodium methallylsulfonate **copolymer**
RL: DEV (Device component use); USES (Uses)
(**porous** polar **polymer film** as separator for nonaq.-electrolyte battery for rapid electrolyte impregnation and leakage prevention)

L25 ANSWER 16 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1997:61043 HCAPLUS Full-text
DOCUMENT NUMBER: 126:77478
TITLE: Nonaqueous electrolyte batteries with single sheet porous polymer separators
INVENTOR(S): Gotanda, Yukihiro; Terao, Yoshiki; Sato, Hiromi
PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08293296	A	19961105	JP 1995-98224	199504 24
PRIORITY APPLN. INFO.:			JP 1995-98224	199504 24

AB The batteries use separators composed of a single porous polymer sheet having 5-50 μm thickness, with the (1-10)-μm thick layer on both sides having porosity 1-10% and the remaining part having porosity 50-95%. The polymer is preferably a polyolefin. These batteries have good performance at high current.
IC ICM H01M002-16
ICS H01M006-16; H01M010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **Primary** battery separators
Secondary battery separators
(single sheet porous **polymer** separators with low **porosity** surface **layers** for nonaq. electrolyte batteries)
IT 9003-07-0, **Polypropylene**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(single sheet porous **polymer** separators with low **porosity** surface **layers** for nonaq. **electrolyte** batteries)

L25 ANSWER 17 OF 17 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1991:539616 HCAPLUS Full-text
DOCUMENT NUMBER: 115:139616
TITLE: Sealed lead-acid batteries
INVENTOR(S): Tokunaga, Akio
PATENT ASSIGNEE(S): Japan Storage Battery Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 03057166 A 19910312 JP 1989-192202
198907
25

PRIORITY APPLN. INFO.: JP 1989-192202
198907
25

AB The batteries have spacers between electrodes in an electrode stack and an electrolyte retainer filled between the electrodes and around the stack. The spacers are corrugated acid- and oxidation-resistant synthetic **resin films** having >70%
perforation, the electrolyte retainer is fine SiO2 prepared from a **primary** powder having particle diameter 10-40 μm, and the electrolyte is impregnated and retained in the retainer. These batteries have good performance and are easy to manufacture

IC ICM H01M010-10
ICS H01M010-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **secondary**
(sealed, lead-acid, with silica **electrolyte** retainers and corrugated perforated **polypropylene** spacers)

=> d l26 ibib abs hitstr hitind 1-15

L26 ANSWER 1 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 2003:142811 HCAPLUS Full-text
DOCUMENT NUMBER: 139:244973
TITLE: Studies on modified atmosphere packaging on quality stability of intact or pre-cut welsh onion
AUTHOR(S): Ibaraki, Toshiyuki
CORPORATE SOURCE: Fukuoka Agric. Res. Cent., Chikushino, Japan
SOURCE: Fukuoka-ken Nogyo Sogo Shikenjo Tokubetsu Hokoku (2002), 18, 1-83
CODEN: FSSHEQ; ISSN: 0913-509X
PUBLISHER: Fukuoka-ken Nogyo Sogo Shikenjo
DOCUMENT TYPE: Journal
LANGUAGE: Japanese

AB Modified atmospheric packaging (MAP) which involves the lowering of oxygen (O2) and increasing of carbon dioxide (CO2) content maintains the quality of fresh vegetables and fruits caused by reduced respiration rates, weight loss, chemical component loss, and delay in yellowing. However, the gas composition surrounding fresh commodities is influenced by the respiration rate of the commodity and the gas permeability of the packaging film. Therefore, use of an improper packaging film may induce an off-odor as a result of anaerobic respiration. The objective of this study was to determine the effect of MAP on quality stability of intact or pre-cut Welsh onion (Allium fistulosum L.). The respiration rate, the chemical components including reduced ascorbic acid (RAA) and sugar, and the quality stability of Welsh onion harvested in summer (July, '95), autumn (Nov., '95), winter (Jan., '96) and spring (Apr., '96) were investigated during storage at room temperature or at 15°. A quadratic regression equation (Y = a + b + T + c + T2), with high relative coefficient (R = 0.993-0.995), was established between respiration rate (mgCO2·kg-1·hr-1) (Y) and temperature of Welsh onion (°C)(T). At the same temperature of 15°, Welsh onion harvested in winter season showed higher respiration rate than that harvested in summer season. In the Welsh onion harvested in summer and stored at room temperature condition, RAA content decreased markedly and the score of leaf tip withering increased. These indicate that the Welsh onion harvested in summer season and stored at room temperature does not retain good quality. RAA and sugar contents in Welsh onion harvested in winter were kept for 6 days, suggesting that it retains good quality during

storage at room temperature On the other hand, summer season Welsh onion stored at 15° indicated much better quality stability than that of winter season. There was a correlation between the respiration rate of Welsh onion and quality stability, meaning that the lower was the respiration rate, the higher was the quality stability. Respiration rates in packages with various gas mixts. were measured by use of a closed system. An empirical equation for the respiration rate of Welsh onion was estimated as a function of the O2 and CO2 concentration The equation that was obtained by multiple regression anal. has a significantly high correlation coefficient (0.92) and estimated as follows. R = 30.40 - 2.06 + [CO2] + 0.57 + [O2]. The effects of several atmospheric composition on respiration, nutrients and quality stability of Welsh onion were investigated during storage at 15°. Carbon dioxide production from Welsh onion under continuous stream of air (the flow rate was 7 litter·hr-1) was 111 mgCO2·kg- 1·hr-1, it was reduced under continuous streams of low oxygen and high carbon dioxide levels. RAA, sugar and chlorophyll retention were better under low oxygen level than that in air. Sensory score of Welsh onion withering leaf tip was reduced under low oxygen levels. From these results, atmospheric compns. such as including 7.6% O2 and 12.6% CO2, 4.1% O2 and 17.1% CO2 resp., gave better quality stability of Welsh onion while avoiding physiol. injury. Using a math. model employing previous equation of respiration rate, the gas composition inside the plastic film package and shipping container was predicted. A theor. model for atmospheric in a polymeric film package containing fresh commodities and in a shipping container was developed and validated by expts. with or without Welsh onion. The model was of three processes: respiration of fresh commodities, and **permeability** of **polymeric film** and of the shipping container. When vacant packages were used, changes in CO2 and O2 concns. inside the bi-axial oriented **polypropylene** (OPP) film package and expanded polystyrene (EPS) container agreed very well with simulated data. The fit indicates the suitability of the proposed model. Changes in O2 and CO2 concns. in the EPS container and O2 concentration in the OPP film package were approximated when Welsh onion was packed in the film package. The predicted O2 and CO2 concentration in the film package differed slightly from the exptl. data with a maximal of 1.5% and 1.2%, resp. However, these exptl. and simulated gas concns. correlated significantly well, indicating that the simulation model can be useful for fresh commodities wrapped both with polymeric film and shipping container. This math. model, therefore, is useful for designing MAP system using polymeric film while in shipping containers with gas permeability. Assuming that CO2, O2 and N2 **permeability** of **polymeric film** is 4100 1700 and 1300 (mL·m-2·day-1·atm-1), resp., O2 concentration in polymeric film will be about 7-8% after 48 h. OPP film is widely used for packaging of fresh vegetables in Japan because of its transparency and adaptability for packaging machinery. Generally, the gas permeability of OPP film is too low to maintain the gas conditions suitable for vegetables. If fresh vegetables are wrapped with completely heat-sealed OPP film and shipped at high temperature, off-odors will result and the quality will deteriorate. So, chemical components and quality of Welsh onion wrapped roughly or completely heat-sealed with OPP film were investigated during storage at 5 and 20°. Concns. of O2 and CO2 in the roughly heat-sealed packages were the same as in air, whereas O2 concentration in the completely heat-sealed packages decreased to 2-3% at 20° and to 4-5% at 5°. Contents of RAA and chlorophyll in onion which was roughly sealed and stored at 20° decreased, and withering of leaf tip occurred. This meant that the quality deteriorated severely. However, the contents of RAA and chlorophyll in Welsh onion is which were sealed completely and stored at 20°, and which were sealed roughly or completely and stored at 5°, did not change or only slightly decreased. In Welsh onion sealed completely and stored at 20°, off-odor was detected after 2 days and severely after 7 days and leaf tips began to wither after 7 days, suggesting that quality could be kept only for 4 days storage. In Welsh onion sealed completely and stored at 5°, off-odors and withering of leaf tip was not observed for 9 days, indicating that quality marketability could be kept for that period. The effects of combinations of OPP film packages and shipping containers on quality stability of Welsh onion were investigated under actual conditions. In

an actual transportation, there was only a small difference in the Welsh onion temperature between EPS container and usual corrugated fiberboard container. The result suggests that both materials have the almost same holding temperature effect. On the other hand, the gas permeability of OPP film is too low to maintain the gas conditions suitable for intact Welsh onion. Recently, OPP film with micro-perforations is developed owing to avoid the anaerobic respiration. Gas permeability of this film is determined by film itself and perforation. So adjusting the diameter or number of micro-perforations, gas permeability of this film could be suitable for this vegetable. In an actual transportation, O2 concentration in the completely heat-sealed OPP film packages in the EPS container decreased to 2%. Therefore, the onion was induced to anaerobic respiration. O2 concentration in completely heat-sealed OPP film packages with 5 micro-perforations in the corrugated fiberboard container decreased to 4.5% at the container was opened, thereafter increased to 7-9%. Therefore, this film made available to prevent the deterioration caused by anaerobic respiration. So the sugar and chlorophyll contents were comparatively retained. Too many micro-perforations were ineffective, however, because the O2 concentration in the package was too high to maintain the MAP condition. To determine the method for evaluating the quality of pre-cut Welsh onion, quality of cut onion was examined and compared with elec. conductivity (EC) and potassium contents of **electrolyte** solution extracted from the onion. Quality of cut onions which were stored at 0, 5 and 10° were stable for 6 days. On the other hand, the quality of onions stored at 15 and 20° slightly deteriorated after 4 and 3 days of storage, resp., and thereafter becoming severe. Degree of EC of onions stored at 15 and 20° decreased for **first** 4 and 3 days of storage, resp., and thereafter began to increase, though degree of EC of onions stored at 0, 5 and 10° decreased during storage. The changes in potassium content extracted by homogenization was steady during storage, although the changes in potassium extracted by leakage similar to those in EC stored at 15 or 20°. Considering the relationship between degree of EC or potassium content and quality of cut onion, **electrolyte** leaked from openings when the tissue was collapsed due to decay. So the **electrolyte** leakage was good parameter to evaluate the decay of onion. Moreover, chlorophyll content is a useful parameter to evaluate the quality of cut onion. Chemical components and quality stability of pre-cut Welsh onion wrapped with unperforated or perforated OPP film package were investigated during storage at 10°. The concentration of O2 in the unperforated OPP film package decreased rapidly and dropped to 2% while CO2 increase. Therefore the onion was induced to anaerobic respiration. So the ethanol was produced and chemical components were reduced. Moreover the cellular of this onion became water-soaked. O2 concentration in the OPP film package with too more micro-perforations decreased slightly. So ethanol was not detected and chemical components were decreased. Moreover the quality of this onion decreased and became unmarketable after 6 days of storage. In cut Welsh onion which was packed with perforated OPP film package (with 24 micro-perforations), O2 concentration in this package was not considered so low as MAP for onion, but decreased and dropped to 10%. So ethanol could not be detected and chemical components could be kept or decreased slightly. Therefore the cut Welsh onion was acceptable for sale for 6 days of storage. These results suggested that MAP is effective technique for maintaining the quality of intact or pre-cut Welsh onion. A theor. model for atmospheric in a polymeric film package containing fresh commodities and in a shipping container was developed. The simulation model can be useful for Welsh onion wrapped both with OPP film and EPS container. The gas permeability of OPP film was too low to maintain the gas condition for intact or pre-cut Welsh onion; an OPP film with micro-perforations was available for avoiding the deterioration caused by anaerobic respiration. It appears the gas composition in the package can extend the shelf-life of the commodity. But too more micro-perforations was ineffective because of the O2 concentration in the package could not be so low to maintain the MAP condition.

CC 17-10 (Food and Feed Chemistry)

L26 ANSWER 2 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN

ACCESSION NUMBER: 2001:713842 HCAPLUS Full-text
DOCUMENT NUMBER: 135:259856
TITLE: Method of fabrication of polymer electrolyte battery of high mechanical strength and high heat resistance
INVENTOR(S): Yamasaki, Mikiya
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2001024756	A1	20010927	US 2001-815009	200103 23
US 6623891	B2	20030923		
JP 2001273929	A	20011005	JP 2000-87627	200003 27
EP 1139479	A2	20011004	EP 2001-106718	200103 16
EP 1139479	A3	20050817		
EP 1139479	B1	20060726		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
TW 492208	B	20020621	TW 2001-90106569	200103 21
CA 2342368	A1	20010927	CA 2001-2342368	200103 26
CN 1316792	A	20011010	CN 2001-116500	200103 27
HK 1039405	A1	20070323	HK 2002-100896	200202 05

PRIORITY APPLN. INFO.: JP 2000-87627 A 200003 27

AB A polymer electrolyte battery having a high discharge capacity, a high mech. strength, and a high heat resistance is provided. This polymer electrolyte battery includes: a polymer electrolyte layer covering an edge face of a pos. electrode plate and an edge part of a **porous** membrane; a **polymer** electrolyte **layer** covering an edge face of a neg. electrode plate and an edge part of the **porous** membrane; and a **polymer** electrolyte **layer** covering an edge face of the porous membrane in a manner that connects the polymer electrolyte layer with the polymer electrolyte layer.

IC ICM H01M010-40
ICS H01M006-16; H01M006-18
INCL 429303000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 37

IT Battery electrolytes
Primary batteries
Strength
Thermal resistance
(method of fabrication of polymer electrolyte battery of high mech. strength and high heat resistance)
IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7429-90-5, Aluminum, uses 7782-42-5, Graphite, uses 9002-88-4, **Polyethylene** 12190-79-3, cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(method of fabrication of polymer **electrolyte** battery of high mech. strength and high heat resistance)
IT 9003-07-0, **Polypropylene** 52496-08-9, **Polypropylene** glycol diacrylate
RL: TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of polymer **electrolyte** battery of high mech. strength and high heat resistance)

L26 ANSWER 3 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1999:387727 HCAPLUS Full-text
DOCUMENT NUMBER: 131:21306
TITLE: Porous films, battery separators using the films, and batteries
INVENTOR(S): Matsushita, Kiichiro; Higuchi, Hiroyuki; Wano, Takashi; Ishisaki, Akira
PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11158304	A	19990615	JP 1998-234740	19980820
PRIORITY APPLN. INFO.:			JP 1997-258950	A 19970924

AB The films, when measured in an organic **electrolyte** solution at .apprx.20°, have a membrane resistance ≤5 Ω.cm2, which increased to ≥1000 Ω.cm2 after hot pressing for 1 s at 100-130° and 5 kg/cm2 for pore sealing.. Preferably, the films have a gas permeability ≤400 s/100 cm3 and contain 10-80% of a **polyethylene**, having crystallinity ≥50% and weight average mo. weight 500-10,000, and 20-90% of a polymer having a m.p. higher by ≥5° than that of the **polyethylene**.
IC ICM C08J009-00
ICS H01M002-16; H01M006-16; H01M010-40; C08L023-04; C08L023-10
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery separator **porous polymer** blend **film**; polyethylene blend porous film separator characteristics
IT **Primary** battery separators
(characteristics of **porous** polyethylene containing **polymer** blend **films** for battery separators)

IT 9002-88-4, Polyethylene
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(characteristics of **porous** polyethylene containing **polymer** blend **films** for battery separators)

L26 ANSWER 4 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1998:586414 HCAPLUS Full-text
DOCUMENT NUMBER: 129:262849
TITLE: Porous films and battery separators with improved low-temperature shut-down capability therefrom
INVENTOR(S): Wano, Takashi; Nishiyama, Souji; Matsushita, Kiichiro
PATENT ASSIGNEE(S): Nitto Denko Corp., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 10237202	A	19980908	JP 1997-42710	19970226
PRIORITY APPLN. INFO.:			JP 1997-42710	19970226

AB The title ≥3-layer films, suitable for separators of nonaq. **electrolytic** solns. in batteries, consist of at least (a) a middle layer prepared from mixts. of **polyethylene** (I; melt index ≤0.35) and **polypropylene** (II) and (b) layers of II on the outsides of the middle layer and satisfy the relation 2% ≤ I content < 30%. Thus, isotactic II and an 80:20 mixture of HDPE (MI 0.3) and isotactic II were extruded to give a 3-layer film, which was heat-treated at 135° for 60 h, stretched, and shrunk. The resulting porous film showed I 20%, a peel strength of 100 g/10 mm, and a shut-down initiation temperature of 126°.
IC ICM C08J009-00
ICS B32B027-32; H01M002-16
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT **Primary** battery separators
(from **porous** multilayer **polymer films**
)
IT **Polymer** blends
RL: POF (Polymer in formulation); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(**porous** multilayer **films** for battery separators from)

L26 ANSWER 5 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1996:644057 HCAPLUS Full-text
DOCUMENT NUMBER: 125:280714
TITLE: Cylindrical air batteries
INVENTOR(S): Noya, Shigeto; Fujiwara, Takafumi; Watanabe, Tomoya; Kubo, Isao; Kobayashi, Shigeo
PATENT ASSIGNEE(S): Matsushita Electric Ind Co Ltd, Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 08222231	A	19960830	JP 1995-24128	19950213
JP 3232936	B2	20011126		
JP 2002063948	A	20020228	JP 2001-205872	20010106
JP 3642298	B2	20050427		
JP 3642297	B2	20050427	JP 2001-205871	20010106

PRIORITY APPLN. INFO.: JP 1995-24128 A3 19950213

AB The batteries use cathodes having a tubular catalyst layer, containing a **polytetrafluoroethylene** dispersed Ni film plated on a current collector, and a gas **permeable porous** hydrophobic **resin film** on the outside of the catalyst layer. The batteries have a tubular cathode with its lover end inserted in a ring shaped recession of a polymer member, which has a Sn plated brass ring on the inside and fit on a polymer sealing piece. The batteries have a tubular cathode with its open covered with an inside metal cap and an outside metal cap, a tubular separator with a sealed bottom inside the tubular cathode, an anode material free gelled **electrolyte** on the inside of the separator facing the inside of the inside cap, and a gelled Zn anode filled in the remaining part of the separator tube.

IC ICM H01M004-86
ICS H01M004-66; H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Batteries, **primary**
(structure of cylindrical air batteries for preventing electrolyte leakage)

L26 ANSWER 6 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1990:500881 HCAPLUS Full-text
DOCUMENT NUMBER: 113:100881
TITLE: Batteries with laminated air-diffusion films
INVENTOR(S): Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01267974	A	19891025	JP 1988-96005	

198804
19

PRIORITY APPLN. INFO.: JP 1988-96005
198804
19

AB Batteries using air-diffusion cathodes have air-inlet openings on their cases and a vinyltrimethylsilane-hexamethylcyclotrisiloxane copolymer film supported with ≥1 porous film between the cases and the cathodes. Porous **polypropylene** films and nonwoven **polypropylene** fabrics were used as supports in examples. These films prevent **electrolyte** leakage from the batteries and increase their shelf life.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Batteries, **primary**
(air-zinc, with air-diffusion **films** from vinyltrimethylsilane-hexamethylcyclotrisiloxane **copolymer** and **porous** supports)

L26 ANSWER 7 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1990:482132 HCAPLUS Full-text
DOCUMENT NUMBER: 113:82132
TITLE: Batteries with laminated air-diffusion films
INVENTOR(S): Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01267972	A	19891025	JP 1988-96003	198804 19

PRIORITY APPLN. INFO.: JP 1988-96003
198804
19

AB Batteries using air-diffusion cathodes have air inlet openings on their battery cases and a vinylphenol-di-Me siloxane block copolymer film supported with ≥1 porous films between the inside surface of the cases and the cathodes. Porous **polypropylene** films and nonwoven **polypropylene** fabrics were used as supports. These films prevent **electrolyte** leakage from the batteries and increase the shelf life of the batteries.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Batteries, **primary**
(air-zinc, air-diffusion films for, containing vinylphenol-di-Me siloxane **copolymer films** and **porous** supporting **films**)

L26 ANSWER 8 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1989:481388 HCAPLUS Full-text
DOCUMENT NUMBER: 111:81388
TITLE: Air battery

INVENTOR(S): Okazaki, Ryoji; Ito, Zenichiro; Takada, Kanji
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 01059782	A	19890307	JP 1987-215647	19870828

PRIORITY APPLN. INFO.: JP 1987-215647 19870828

AB The battery containing a gas-diffusion O cathode has a composite film of ≥1 microporous film supported by a thin polymethylpentene film inserted between the battery case and the cathode. The microporous film can be a polyolefin (**polypropylene** or **polyethylene**), a fluororesin, or a **polysulfone**, and is on the battery-case side of the composite. The polymethylpentene film can be in direct contact with the cathode or have a porous **PTFE** film in between. Air batteries using this composite do not show **electrolyte** leak and have good performance at high and low loads.

IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Batteries, **primary**
(air, polymethylpentene-microporous polymer composites in, for preventing electrolyte leak)
IT Fluoropolymers
RL: USES (Uses)
(**films**, composites of **polymethylpentene** and **microporous**, for air batteries)
IT 9016-80-2, Poly(methylpentene)
RL: USES (Uses)
(composites of **microporous polymer films** and, for air batteries)
IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene
RL: USES (Uses)
(**films**, composites of **polymethylpentene** and **microporous**, for air batteries)

L26 ANSWER 9 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:634174 HCAPLUS Full-text
DOCUMENT NUMBER: 109:234174
TITLE: Alkaline batteries with porous separators
INVENTOR(S): Ikeda, Konosuke
PATENT ASSIGNEE(S): Sanyo Duracell Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

JP 63158741	A	19880701	JP 1986-305021	198612 19
PRIORITY APPLN. INFO.:			JP 1986-305021	198612 19

AB Alkaline Zn-MnO2 batteries have **porous** synthetic-**resin film** separators with or without alkaline-resistant nonwoven cloth of natural or synthetic fibers on the anode side. The film is **polyethylene** film; and the cloth is made of **nylon**, vinylon, **polypropylene**, or cotton fibers. Thus, when discharged through a 3.9-Ω resistor to 0.9-V cutoff, Zn-MnO2 batteries using 20-μm porous **polyethylene** separators and a ZnO-saturated 40% KOH **electrolyte** had a discharge durations of 4.30 and 3.40 h before and after a 30-day storage at 60° vs. 4.44 and 3.46 h for batteries using a 0.1-mm-thick nonwoven vinylon separator. No leak was observed on batteries of the invention after storage, however 20% of the latter batteries showed leak.

IC ICM H01M002-16
ICS H01M006-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Batteries, **primary**
(separators, porous polyethylene films)

L26 ANSWER 10 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:613606 HCAPLUS Full-text
DOCUMENT NUMBER: 109:213606
TITLE: Lithium batteries with metal-coated separators
INVENTOR(S): Imaizumi, Masahiko; Niso, Kiyoshi; Sasama, Hiroshi; Okamoto, Osamu; Iwamaru, Futayasu
PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63143744	A	19880616	JP 1986-290920	198612 06
PRIORITY APPLN. INFO.:			JP 1986-290920	198612 06

AB **Microporous resin films** for use as separators in Li batteries have a metal electrochem. alloyed with Li on its anode-facing side. The metal is selected from Al, Sn, Zn, Pb, Bi, Si, Sb, and/or Mg. Thus, a 5-μm Al layer was vapor deposited on a microporous **polypropylene** separator for use in a button-type Li-MnO2 battery with a 1M LiClO4/2:1 (volume) propylene carbonate-MeOC2H4OMe **electrolyte**. The Al layer was electrochem. alloyed with Li prior to assembling into the battery. Batteries of the invention had internal resistances of 10-15 Ω and closed-circuit voltages of 2.45-2.52 V at the end of a 0.2-s discharge through a 560-Ω load at 10° after a 160-h predischarging through

an 18-kΩ load at 25° vs. 15-20 Ω and 2.30-2.42 V for batteries using a sep. 5-μm Al sheet between the anode and uncoated separator.

IC ICM H01M004-06
ICS H01M004-02; H01M004-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Batteries, **primary**
(separators, polypropylene, with aluminum-lithium alloy layers, for low resistance)

L26 ANSWER 11 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:593810 HCAPLUS Full-text
DOCUMENT NUMBER: 109:193810
TITLE: Organic-electrolyte batteries with improved separators
INVENTOR(S): Nishino, Shuichi; Izumikawa, Toshihiko
PATENT ASSIGNEE(S): Matsushita Electric Industrial Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63155553	A	19880628	JP 1986-302009	198612 18

PRIORITY APPLN. INFO.: JP 1986-302009 198612 18

AB Separators for organic-**electrolyte** light-metal batteries are prepared by winding a ribbon of a separator material into a tube, fixing the seams, bending 1 end of the tube inwardly to form a cup shape, and inserting a circular piece of nonwoven cloth into the tube to seal the cup-shaped bottom. The ribbon can be nonwoven cloth of synthetic **resin** fibers or **porous** synthetic **resin film**. Thus, separators prepared from nonwoven **polypropylene** cloth tubes with nonwoven **polypropylene** cloth sealing the bottom were used in Li-MnO2 batteries with 1M LiClO4/propylene carbonate-MeOC2H4OMe **electrolyte**. After 120 heating-cooling cycles between -10° and +60°, none of these batteries showed **electrolyte** leak whereas 10 out of 100 control batteries did. Batteries of the invention had an average internal resistance of 7.5 Ω with a standard deviation of 1.0 Ω, vs. 12.6 and 8.6 Ω for control batteries.

IC ICM H01M002-18
ICS H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT Batteries, **primary**
(separators, nonwoven polypropylene cloth, manufacture of, for leak prevention and low internal resistance)

L26 ANSWER 12 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1988:513480 HCAPLUS Full-text
DOCUMENT NUMBER: 109:113480
TITLE: Lithium battery with porous polymer separator
INVENTOR(S): Okamoto, Osamu; Sasama, Hiroshi; Niso, Kyoshi; Iwamaru, Futayasu

PATENT ASSIGNEE(S): Hitachi Maxell, Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 63126159	A	19880530	JP 1986-272402	198611 15

PRIORITY APPLN. INFO.: JP 1986-272402 198611 15

AB A Li battery has a Li-alloyable metal sheet on the separator side of a Li block with the separator made of **microporous resin film** having pore size <0.3 μm. The metal is Al, Sn, Zn, Pb, Bi, Si, Sb, and/or Mg. Thus, 2 25-μm **polypropylene** films having oval pores of 0.1- and 0.04-μm diams. were stacked with long diameter of pores on 1 film perpendicular to that on the other film to form a separator for use in a battery having a Li anode block with an Al sheet on the separator side, a CuO-FeS2 cathode, and a 1M LiClO4/2:1 (volume) propylene carbonate-MeOC2H4OMe **electrolyte**. Batteries of the invention had an internal resistance of 13-20 Ω, a discharge duration of 560-585 h when discharged through a 2-kΩ load, and none showed short circuiting after a vibration test (JIS C 5025), vs. the resp. values of 12-18 Ω, 280-585 h, and 25 short circuiting out of 1000 batteries using a separator of 1 30-μm **polypropylene** film having 0.5 + 5.0-μm pores.

IC ICM H01M004-06
ICS H01M002-16; H01M004-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Batteries, **primary**
(separators, polypropylene, lithium)

L26 ANSWER 13 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1987:199280 HCAPLUS Full-text
DOCUMENT NUMBER: 106:199280
TITLE: Nonaqueous batteries
INVENTOR(S): Kimura, Yukio
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 62055871	A	19870311	JP 1985-195060	198509 04

PRIORITY APPLN. INFO.: JP 1985-195060 198509 04

AB Title batteries have light-metal (Li or Na or its alloy) anodes, cathodes which expand during discharge, **microporous resin-film** separators, **electrolyte** retaining rings above or below separators, and **electrolyte** layers inside the rings. A button-type battery was prepared by using a Cu oxide-10 graphite-5% fluororesin cathode, a Li anode, a microporous **polypropylene** separator, and a **polypropylene** ring filled with **electrolyte** of 1M LiClO4 in propylene carbonate-MeOC2H4OMe. This structure prevented the increase of internal resistance due to the removal of **electrolyte** from the separator which was observed in control batteries without the ring.

IC ICM H01M006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

IT Batteries, **primary**
(lithium-copper oxide, nonaq., with **polypropylene** **electrolyte**-retaining rings)

IT 9003-07-0, **Polypropylene**
RL: USES (Uses)
(**electrolyte**-retaining rings, in nonaq. lithium-copper oxide batteries)

L26 ANSWER 14 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1986:504683 HCAPLUS Full-text
DOCUMENT NUMBER: 105:104683
TITLE: Nonaqueous battery
INVENTOR(S): Ubukawa, Satoshi; So, Shinji; Amezutsumi, Toru
PATENT ASSIGNEE(S): Sanyo Electric Co., Ltd., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 61077270	A	19860419	JP 1984-197508	19840920

PRIORITY APPLN. INFO.: JP 1984-197508 19840920

AB A nonaq. battery has an anode of Li, Na or their alloys in an anode case, a cathode that expands during discharge in a cathode case, a **porous resin-film** separator, and a
conductive ring between the cathode and the cathode case defining a space for **electrolyte** storage. Thus, a mixture of FeS2 85, graphite 10, and a fluororesin powder 5% was pressed at 2 tons/cm2 to form a pellet (diameter 11, thickness 1.8 mm), and heated to form a cathode. A stainless steel ring was placed between the cathode and a cathode case, and a 1M LiBF4/propylene carbonate-MeOC2H4OMe **electrolyte** was filled into the storage space. A battery using this cathode structure, a Li anode, and a 0.025-mm-thick porous **polypropylene** separator showed a flat, slowly decreasing discharge voltage for .apprx.600 h when discharged through a 5.6-kΩ load at 20°, vs. a fast voltage drop after .apprx.200-h discharge for a battery without the ring and **electrolyte** between the cathode and the cathode case.

IC ICM H01M006-16

CC 72-3 (Electrochemistry)

Section cross-reference(s): 52
IT Batteries, **primary**
(button-type, iron sulfide-lithium, with stable discharge voltage)

L26 ANSWER 15 OF 15 HCAPLUS COPYRIGHT 2007 ACS on STN
ACCESSION NUMBER: 1967:11278 HCAPLUS Full-text
DOCUMENT NUMBER: 66:11278
TITLE: Effect of reaction of water and electrolytes during their counterdiffusion in polymers
AUTHOR(S): Lobanov, Yu. E.; Shterenzon, A. L.
SOURCE: Lakokrasochnye Materialy i Ikh Primenenie (1966), (5), 42-4
CODEN: LAMAAD; ISSN: 0130-9013
DOCUMENT TYPE: Journal
LANGUAGE: Russian
AB The method usually applied for measuring **electrolyte permeability** through **polymer films** does not consider the influence of counterdiffusion of water. This effect was investigated with high-pressure **polyethylene**, poly(tetrafluoroethylene), and tetrafluoroethylene-vinylidene fluoride copolymer films. The film was clamped between two glass half-cells; one of them was equipped with Pt electrodes and filled with water, the other was filled with HCl or HNO3 solution The half-cells were not filled simultaneously, but one after another with a delay of 1-3 hrs. In the **1st** stage, the **electrolyte** solution or water penetrated into the dry film, the diffusion being unaffected by counterdiffusion of the other component. In this arrangement, the curves representing the amount of acid passed show a discontinuity corresponding to the effect of incipient counterdiffusion. The rate of acid diffusion decreases from 4.5 + 10-4 g./hr. to 0.5 + 10-4 for 3.1 cm.2 poly(tetrafluoroethylene) due to interaction of counter-diffusion of water. Similar results were obtained for other films. When the fronts of penetrating liquids meet, mol. associated structures are formed from mols. of water and **electrolyte**. Thus, light-scattering centers appear in the film.
CC 35 (Synthetic High Polymers)

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